



Translation

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

21 DEC 2004

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/001998	International filing date (day/month/year) 27 juin 2003 (27.06.2003)	Priority date (day/month/year) 02 juillet 2002 (02.07.2002)
International Patent Classification (IPC) or national classification and IPC H04S 1/00		
Applicant THALES		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 19 décembre 2003 (19.12.2003)	Date of completion of this report 25 March 2004 (25.03.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/001998

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 1-9 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_ 1-17 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the drawings:  
 pages \_\_\_\_\_ 1/4-4/4 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/FR 03/01998

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-17	YES
	Claims		NO
Inventive step (IS)	Claims	1-17	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-17	YES
	Claims		NO

2. Citations and explanations

1. The present international application concerns a system for spatializing at least one sound source, the system generating two spatialized mono channels for each sound source. The system comprises a database, containing an assembly of head-related transfer functions peculiar to the listener, and a data-presentation processor that receives information from each source and comprises a module for calculating relative positions of the sources with respect to the listener. The system further comprises a unit for calculating mono channels by convoluting each sound source with estimated head-related transfer functions of the database with respect to the position of the sound source.

This system is used, for example, in modular avionic equipment for processing data for a pilot.

2. A system of this type is known from prior art document FR 2 744 871 A, discussed on page 1, line 25, to page 2, line 6, and cited in the international search report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/FR 03/01998

The other international search report citations are less relevant.

In particular, EP 0 827 361 A concerns a spatialization system in which the stored listener-specific head-related transfer functions are modified for the calculation of the signals in the two mono channels, in order to emphasize the spatialization effect in the forward-backward direction.

US 6 173 061 B concerns a system for spatializing sound sources which is based on head-related transfer functions. This system is designed to compensate the effects of diaphony associated with the two system speakers.

3. The claimed spatialization system is defined by the single independent claim, claim 1. Dependent claims 2 to 17 concern preferred embodiments of the claimed spatialization system.
4. The claimed spatialization system differs from the available prior art by the feature whereby the data-presentation processor comprises a head-related transfer function selection module with variable resolution adapted to the position of the source relative to the listener.

Therefore the claimed spatialization system is novel (PCT Article 33(2)).

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR 03/01998

5. This selection module enables variable resolution to be selected for each head-related transfer function (between a specific point on the sphere and one of the listener's ears), making the claimed spatialization system particularly flexible and enabling the calculation means, that is, the number of processors required, for example, to be reduced (see page 5).

Neither the available prior art nor the general knowledge of a person skilled in the art suggests modifying the known spatialization system using a selection module of this nature. Therefore the claimed spatialization system involves an inventive step (PCT Article 33(3)).

6. The invention clearly has industrial applicability (PCT Article 33(4)).
7. The embodiments defined in the dependent claims are novel, involve an inventive step and have industrial applicability for the same reasons.